

# Nepal

## Scaling-up Mountain Ecosystem-based Adaptation: building evidence, replicating success, and informing policy



### Background

Nepal is a landlocked country that lies in the central part of the Himalayas within the Hindu-Kush Mountain range. Its elevation ranges from the snow-covered mountain region containing Mount Everest at 8,848 m to 60 m above sea level in the southern lowland plains. These striking changes in elevation along a relatively short width from north to south and the linked changes in the climate, have resulted in a uniquely rich diversity of over 100 ecosystems.

Most of Nepal's 30 million people live in mountain areas relying on the essential services that ecosystems in their mountains provide.

However, now mountain areas are warming faster than the

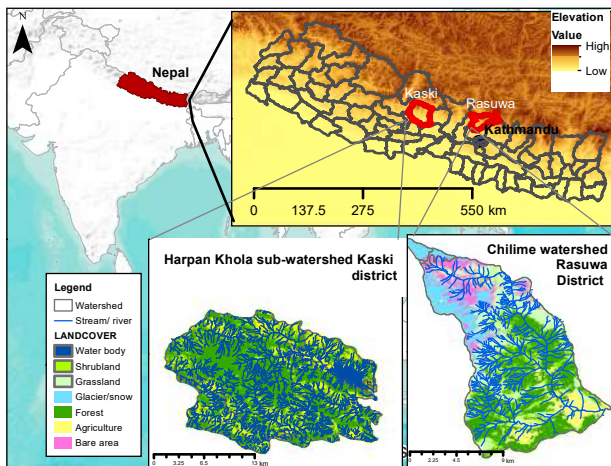
global average, and climate change is severely affecting the lives of the population of Nepal. There is 15-20% more rain during the monsoons and resultant floods, landslides and soil erosion. In contrast, during the dry season, there are droughts. As a consequence, among other impacts, food security is threatened and risk from extreme weather events is increased.

### Scaling-up Mountain Ecosystem-based Adaptation in Nepal

#### Local-level EbA measures (consolidation and replication)

Following up on the success of the flagship mountain EbA project from 2011-2016, the Scaling-up Mountain EbA project was implemented at the local level in the

## SCALING-UP MOUNTAIN ECOSYSTEM-BASED ADAPTATION



Harpan khola watershed, in the Panchase region of the Kaski district to consolidate EbA measures from the previous phase, as well as introduce new EbA actions. In the Chilime watershed in the Rasuwa district, successful actions were replicated.

### Community-based EbA actions

In Chilime these actions included

- Conservation and promotion of the cultivation of the love apple (*Satuwa* in Nepali) (*Paris polyphylla*), a high value, traditional medicinal plant native to the area that is listed globally as 'Vulnerable'. This action established a medicinal plant community nursery, involving 18 households and extending over 0.162 ha, with basic training and establishment of nurseries; supplied rhizomes<sup>1</sup> as an incentive to begin cultivation; provided advanced level training on harvesting and expanded cultivation of this plant, contributing to its *ex-situ* conservation.
- Improvement of pasture lands: Cattle are grazed in high mountains during the summer and in lower pastures during the winter. Increasing temperatures have increased the loss of snow, affecting the provision of water. The action of ensuring water security by channelling water from a perennial river to construct water recharge ponds has improved the lives and livelihoods of 79 households in 4,767.7 hectares. A pastureland management plan has been developed, and indigenous knowledge in the area documented.
- Bee keeping: Bees are one of the most critical pollinators of the flowers of many important crops. Already threatened by pesticides, land use changes and the spread of disease carriers, bees are also affected by warming temperatures, that exceed their levels of tolerance. For this EbA

action, basic and advanced training in bee farming, hive construction, management, quality control and marketing was provided for 12 households. Assuming the bees in one beehive collect pollen from an area of 100 ha, the project's bee-keeping actions (12 hives) would have improved pollination in 1,200 ha.

- Organic farming and cultivation of Asparagus (planting 100 crowns), was also introduced for 31 households, in 0.04 ha. Organic farming ensures that chemical fertilisers and pesticides are not used, but also emphasises using a whole ecosystem approach that conserves the soil, micro-organisms, other plants, beneficial insects, and other animals as well.

In the Panchase in the Kaski district, the effectiveness of EbA measures was analysed and effective EbA successful actions were consolidated and continued.



Villagers preparing the land for a *Paris polyphylla* nursery © Alisa Rai



Training villagers in bee keeping © Alisa Rai



Brooms made by schools children © Alisa Rai

<sup>1</sup> Rhizomes are horizontal underground plant stems capable of producing shoot and roots of a new plant.



These included:

- In the mid-hills of the Panchase, erosion and resultant landslides are common along many roadsides built without considering the environmental impact and measures to control erosion. Planting native broom grass (*Thysanolaena nees*) on the edge of farm fields was introduced about a decade ago, but planting this species along the newly constructed rural roadsides was piloted through the flagship project. Planting broom grass along roadsides has been shown to reduce erosion, because the grass is a hardy, perennial, and its clumping roots form a network that holds water and soil together. This action was consolidated in this project. In this project, 110 households were involved in planting 26,550 broom grass rhizomes in 1.32 ha along roadsides, as well as on public and private lands. A significant co-benefit from this action is that once the grass is grown fully, the grass can be cut and sold – the leaves as fodder for livestock, the flower heads as brooms and the stems as fuel wood. An initial assessment shows that broom grass cultivation increased the annual household income by an average of about 20,000 NPR (157.01 USD). This action is an excellent example of gender responsive EbA, where community women's group members were involved and received both social and economic benefits from the actions.
- Also consolidated in this phase was the conservation of community ponds, which reduces water run-off and increases infiltration. Such ponds not only reduce the impact of landslides but also help store rainwater for dry seasons and support the recharge and maintenance of soil moisture. Locally available materials and local knowledge were used to restore the ponds and to channel water from springs. During this project, three new community ponds were constructed and restored. Consolidated from the previous phase were the continued conservation and maintenance of 17 ponds. Both replication and consolidation efforts benefitted 240 households.
- In concert with pond rehabilitation, the continued conservation of seven water sources, and rehabilitation of five new sources, benefitted 111 households.
- Also consolidated and replicated in the Harpan khola watershed was organic farming, using 525 coffee (in 0.25 ha) and 6,340 cardamom seedlings (in 1.5 ha) benefiting 11 and five households respectively. Organic vegetable



A conserved village pond in Prabat © Alisa Rai



Construction of livestock shed © Alisa Rai



A conserved tree fern (*Alsophila spinulosa*) © Alisa Rai

farming was implemented in two hectares for 12 households already engaged in homestays.

- In Harpan Khola too, bee keeping (40 beehives) was implemented for 68 households, improving pollination in 4,000 ha.
- Prior to the project, communities allowed animals to graze openly, but from the perspectives of ecosystem health and climate change, this was now an issue of concern. Through the project, 108 household benefitted from the construction/improvement of livestock sheds, not only to protect animals but also to collect and use animal waste in their farms and increase organic matter content and moisture content in the soil.
- To conserve the tree fern (*Alsophila spinulosa*), which is on Appendix II of CITES (where

international trade is restricted), awareness about the importance of conserving this species was created in the community and 20 households were directly involved in conservation activities. Two plots were established for the conservation of this species.

- Other community EbA actions included the improvement of soil quality (through the application of lime), the establishment of a herbal garden for 50 and 15 households respectively, and the update of a biodiversity garden in five hectares.

As shown above, in this project, communities have been key actors, engaged directly in project activities.

### Local government engagement

In this project, the local government also has been a key actor, drawn in to ensure replication of EbA measures at the local level.

- One of the key achievements of the project in Nepal is that through extensive creation of awareness and capacity building of local government officers and locally elected persons, as well as sharing evidence from on-the-ground EbA actions, EbA has been integrated into local policies/plans and strategies. Shown below is the list of such local plans.
  - Panchase Protected Forest Management Plan;
  - Community Forest Operational Plan;
  - Local Community Development Plan; and
  - Plan for the Bhumlu Rural Municipality, Kavrepalanchowk District.
- Not only do local governments now integrate EbA into their plans, but they also channel federal and provincial level funds into community EbA measures, such as home stays, livestock shed improvement, planting broom grass along roadsides, organic farming and pond and water source conservation.

### Scaling-up: integration of EbA at the National Level

To ensure scaling-up of ground and local level EbA measures into the national arena, the country team engaged in policy advocacy. Through well over 30 sessions of sharing evidence and knowledge gained from on-the-ground EbA actions with national level government officers and at national fora, ecosystem-based adaptation has now been integrated into national plans and policies such as the

- National Adaptation Plan (NAP) – a plan of existing information about climate change with profiles of

priority projects that are intended to address climate change adaptation needs that have been identified and submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

- Nationally Determined Contributions – ensuing from the Paris Agreement of 2015, which is a climate action plan to cut emissions and adapt to climate impacts – updated every five years.
- Scaling-up EbA into other districts, through the EbA II project, supported by UNEP and implemented by the Ministry of Environment and Forests.

### Boosting the spread of the use of EbA in Nepal by sharing knowledge and experiences

Another key achievement of the project in Nepal has been the sharing of its knowledge and experience to facilitate the dissemination and prioritisation of the EbA approach into regional areas within target countries. These are:

- ‘Ecosystem-Based Adaptation for Climate-resilient Development in the Kathmandu Valley’ a Global Environment Facility funded urban EbA project, implemented by UNEP, was developed from this project’s model in the urban, mountain areas of Nepal.
- ‘Improving climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin, Nepal’ supported by the Green Climate Fund, implemented by IUCN and executed by the Ministry of Forests and Environment, Nepal, which aims to enhance the adaptive capacities of vulnerable communities and ecosystems in the Gandaki river basin.

### Conclusions

The project on ‘Scaling-up Mountain Ecosystem-based Adaptation: building evidence, replicating success, and informing policy’ implemented in Nepal between 2017–2022, has a) effectively consolidated EbA actions from the previous phase; b) replicated them in a new site and also ensured horizontal integration into local governments’ plans and programmes; and c) scaled-up EbA actions into national plans and policies. As stated by an interviewee, “EbA has now spread all over Nepal”.

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